

# Canadian ports: opportunities and challenges in the age of expansion

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In 2005, a forecast of container trade growth found that global containerisation should almost double in the coming decade, with container throughput in North America expected to increase by 75 per cent. Much of the anticipated growth comes from increased trade with China and other Asian nations. Container ports can be seen as gateways that connect continental trade corridors with the global marketplace. This article will outline international trade trends and the opportunities and challenges facing North American ports. The development of gateways and trade corridors is also considered, along with the impact of container trade growth on ports.

As a result of the earlier Free Trade Agreement (FTA) with the US and the subsequent North American Free Trade Agreement (NAFTA) that included Mexico, Canada's international trade has shifted north-south. This trend has led to numerous trade corridor promotion organisations across the country. Trade corridors involve products, services and information flowing through communities in geographic patterns.

## Gateways for trade corridors

During the past decade, governments have paid considerable attention to trade corridors, seeking to provide public investment to facilitate trade. Most proposed north-south trade corridors link US Interstate Highways with their Canadian counterparts. However, other than some improvements in selected border crossings, little has been achieved.

In recent years, trade has become increasingly global. Trade corridor proponents have come to see ports as gateways connecting proposed corridors to the global marketplace. In the Canadian context, the first gateway is the Asia-Pacific Gateway and Corridor Initiative focused on the lower British Columbia mainland, Prince Rupert and the ports' hinterlands. The Asia-Pacific Gateway Initiative received C\$591 million in federal funding to supplement provincial, municipal and private support to develop and enhance essential transportation infrastructure. The Initiative's aim is to reduce congestion and ease the flow of goods through the ports of Vancouver and Prince Rupert.

The Halifax Gateway Council was established in 2004. Its objective is to tap into the growing container trade with Asia being diverted through the Suez to the east coast due to congestion concerns in west coast ports. Last year, Melford International Terminal Inc. purchased a large tract of Nova Scotia land, valued at C\$5 million, for its planned container terminal at the Strait of Canso, as part of a broader Atlantic Gateway initiative. Sydney, Nova Scotia, has joined the queue, seeking container terminals for its port. Meanwhile, Halifax and Saint John continue to seek additional container throughput for their existing under-used container terminals.

However, merely focusing on ports and terminal improvements as a gateway strategy may not be the most effective approach. A more comprehensive model is needed to also address congested highways and intermodal rail systems.

## Container trade

Container traffic continues to grow worldwide. A 2005 forecast of container trade growth by Ocean Shipping Consultants found

that global containerisation should almost double in the coming decade with container throughput in North America expected to increase by 75 per cent. Much of the anticipated growth comes from increased trade with China and other Asian nations.

Although a significant proportion of this throughput will go through west coast ports, growth is expected in Asian traffic to and from the east coast via the Suez Canal. In 2004, some 22 per cent of Asia-US traffic moved through east coast ports, with this trade growing at almost twice the rate of the west coast due to congestion delays. Added port constraints on the west coast include environmental restrictions and increasing intermodal rail rates. These will probably encourage a further shift to east coast ports.

Optimistic container growth forecasts now need to be tempered by the US economic recession. In recent months, US west coast ports have noted a decline in container throughput due to problems in the US housing market and the associated loss in consumer confidence.

In recent years, containerisation growth has caused congestion and ship delays in west coast ports. In Vancouver, delays led the two Canadian rail operators CN and CP to take the unprecedented step of co-operating by sharing regional rail lines to move containers more efficiently. In the US, major investments have been made to improve intermodal movements through congested urban areas, such as the Alameda Corridor in Los Angeles/Long Beach.

In 2006, MergeGlobal Forecasting found that Los Angeles and Long Beach were operating at almost full capacity (at 88 per cent and 91 per cent respectively). Thus without significant future expansions, these ports will be unable to handle anticipated container throughput growth. Other US west coast ports are also reaching capacity.

Much of the container trade growth comes from the rapid emergence of China as a major manufacturing and trading nation. The trans-Pacific pendulum trade from Asia to the west coast is booming. The alternative pendulum route from Asia via the Suez Canal to the east coast is experiencing moderate trade growth. It is this alternative route from India, Asia and China that is driving the development of proposed major container terminals in the Atlantic Gateway initiative.



Alameda Intermodal Corridor.

### Panama Canal development

However, the Suez opportunity may be short-lived due to the current expansion of the Panama Canal. The new canal locks are designed to serve the larger mega-size 12,000 TEU container ships. As suggested by C Dupin, the threat to Canada's east coast ports is that 'the new canal will allow more cargo to be carried on big ships from the Far East to ports along the US East and Gulf Coasts. That could help ease congestion on the US West Coast and still allow carriers and shippers to reap the benefits of the economies of scale big ships provide.' Southern US ports are already gearing up to serve additional container ships using the enlarged Panama Canal.

### Larger container ships

Over the years, container ships have continued to increase in size as shipping companies have sought economies of scale in a highly competitive market. As container ships get larger, there are limits to the ports they can serve due to physical constraints of water depth, channel widths and size of turning basins, as well as the lift capacity of the ports' cargo handling equipment and their productivity.

The trend for larger container ships continues. Post-Panamax vessels (those too large to fit the current Panama Canal) handling more than 6,000 TEU are now commonplace in major trade routes serving Asia. Recent orders for new container ships reflect significant size increases. In August 2007, COSCO announced their order for eight 13,100 TEU vessels for delivery in 2011, with Zim Line soon following with an announcement of their order for eight 12,600 TEU ships for 2012. Currently, the largest container ship afloat is the Emma Maersk, the first of a series of eight 'PS-class' ships. At nearly 400 metres long, 56 metres wide and with a draft of 15.5 metres, the Emma Maersk

can carry 14,800 TEU, although Maersk Lines rates her as an 11,000 TEU vessel. With a 56-metre beam, she is too wide for even the enlarged Panama Canal.

As larger ships become more common, there are industry concerns that economies of scale may not be available unless ports improve their container handling productivity to turn these mega-size container ships around fast. In addition, some shipping lines fear that projected new build capacity will outstrip container traffic growth.

A key question is which container ports can handle such mega-sized ships? An earlier study by G de Monie suggested that a global fleet of 15,000 TEU vessels would probably need only four hub ports to serve them – South-East Asia (most likely Singapore or Malaysia), Mediterranean and North America's east and west coasts. Feeder vessels and intermodal systems would distribute containers to and from these four hub ports. The study went further to propose the construction of an offshore island on the US east coast as a major hub port.

In response to the proposed offshore island facility, another study suggested there are sufficient suitable deep-water ports in Canada to readily serve North American container requirements.

These ports include Vancouver Fraser and Prince Rupert on the west coast, and Halifax, Saint John, the Strait of Canso area, Sydney and Sept Îles on the east coast. In today's increasingly security conscious world, the use of non-urban, more isolated container transshipment ports may become tomorrow's norm. Locating such hub ports outside urban areas would allow for container inspections in more secure and less populated areas. Hence, Canada's more remote deep-water ports may well serve North America's need for new container hub ports. Thus the future may see more major container



Emma Maersk.



Vancouver Fraser Deltaport Container Terminal.

ports on both coasts providing security in non-urban, more isolated locations and offering port diversity to shipping lines to ensure delivery reliability. These trends offer significant opportunities for Canadian ports.

#### Impact on ports

Some of the key elements affecting most container ports include port congestion, security, urban development, environmental concerns and sustainability. These are all factors that can impede port expansion.

To address its throughput congestion problems, Vancouver Fraser is developing a third container berth and seeking a private partner to build a second container terminal at Deltaport. These new facilities will increase the port's annual container throughput to more than 4 million TEU by 2012. In 2007, Prince Rupert opened a new 500,000 TEU container terminal. This container terminal contributes needed capacity for the growing trans-Pacific trade in its unique isolated, non-urban setting.

A major trend impacting port facilities is public demand for waterfront access for non-marine activities. In ports around the world, politicians, municipal officials and citizen groups seek to convert port lands to urban-oriented uses such as waterfront condominiums, walking trails, cafés and boutique shopping areas. Initially proponents of such developments welcome busy marine terminals and an active harbour area. But then they may tire of the ongoing noise (particularly at night), dust, air emissions from port equipment and ships, light spillage from the terminal, truck and rail traffic and other detrimental aspects of cargo-handling operations. In turn, this leads to pressure to constrain commercial

#### Attributes of container hubs

A successful container hub port reflects several key features. In the past, a major attribute was having a significant volume of captive traffic in nearby major metropolitan areas. However, as discussed, today's security concerns may mean future hub ports are located in more remote areas. Other key attributes of container hubs include:

- Being located close to main shipping routes and feeder ports
- Being accessible to mega-sized container ships
- Offering appropriate infra- and super-structure including good intermodal linkages and appropriate container lift equipment
- Having a reputation for continued high productivity
- Competitive rates and tariffs, and
- Being reliable and free from labour strife.

North American ports need to be able to meet most of these key attributes to achieve hub port status. For example, the 2005 truckers' strike in Vancouver and the truckers' one-day walkout in Los Angeles and Long Beach did not convey a sense of port reliability to the world's major shipping lines.

activities by limiting hours of operation, reorienting dockside lighting, and restricting truck traffic. In the extreme, terminals are forced to shut down and move their operations to other, more remote locations. This phenomenon can be seen in Sydney, Australia, where over the years many port operations have been curtailed and relocated to nearby Botany Bay.

To accommodate public access demands, many ports are incorporating sustainability as a key goal. Sustainability is defined by the American Association of Port Authorities as 'balancing the financial, social and environmental needs ... and integrating that balance into day-to-day business activities'. Sustainability reflects the ports' recognition that their role goes beyond marine cargo handling to being good corporate citizens focusing on 'people, planet and profits'.

## Elements for success

The growth of the global economy has been underpinned by the lower freight rates and reliability generated by containerisation. Competition has led to ever-larger ships seeking economies of scale.

NAFTA has led to an interest in north-south trade corridors. As corridor discussions have matured, it has become evident that ports on or near these major trade corridors play a key role as gateways connecting North American markets to the global economy. The focus on trade corridors and gateways has evolved into considering a fully integrated intermodal transport system as a comprehensive logistics chain.

There are opportunities for Canadian ports to serve as container hubs on both coasts. Ongoing congestion and capacity constraints in major US ports could lead to developing remote Canadian alternatives. Other Canadian ports can serve the growing continental container trade with terminal expansions at Vancouver Fraser, Prince Rupert, Halifax, Saint John and proposed container terminals in the Strait of Canso, Sydney and Sept Îles.

There are several key elements required for a port's success in the container trade. The first is geographic location. Ports seeking to grow to hub status must be located on or near the main shipping routes and connected to trade corridors. Few shipping lines can afford to divert their ships to serve isolated ports, unless these ports act as the terminus of the pendulum trade between Asia and North America.

Secondly, ports seeking to serve mega-sized container ships must be accessible to them. This means having water depths of more than 15 metres, along with appropriate turning basins and navigation channels.

Thirdly, container hubs must maintain a reputation for continued high productivity in terms of ship and truck/rail turnaround time. Such productivity implies having spare capacity in terms of container yard storage and lifting equipment, including ship-to-shore gantry cranes and terminal equipment along with a stable and reliable labour force working round the clock. Productivity also implies port flexibility – the ability to rapidly adopt new and changing technology to maintain high throughput levels. Flexibility also means dealing with land-side pressures aimed at constraining terminal operations and converting underused port lands to alternative uses. Dealing with the community and environmental consequences of a major container terminal requires tact, diplomacy and compromises from port officials as part of an overall sustainability strategy.

Fourthly, container hubs need efficient intermodal linkages (road, rail and short sea shipping) to ensure containers are moved through the terminal quickly to their final inland destinations.

Finally, these key elements must be achieved economically such that the rates and tariffs charged for container moves through the port remain competitive.

Achieving these key elements is not an easy task, but they are essential if container ports wish to remain key players in the continued development of the world economy.

### ABOUT THE AUTHOR



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### ABOUT THE ORGANISATION

The **Association of Canadian Port Authorities** was founded in 1958 and groups together ports and harbours and related marine interests into one national association. Canada Port Authorities handle more than C\$142 billion worth of cargo annually. The ACPA is the pre-eminent association for the advocacy and advancement of the Canadian Port Industry. ACPA members contribute greatly to the local, regional and national economy of Canada.

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